

Remarks

The Applicants have amended Claim 15 in the paragraph that specifies subjecting the multifilament yarn to an interlacing treatment. Thus, that paragraph now recites the step of “subjecting the multifilament yarn to an interlacing treatment with an interlacing treatment nozzle that controls tension gradient between the second heated roll and the winder.” Support may be found in lines 1-2 of page 14 of the Applicants’ Specification, for example. The Applicants respectfully request that this change to Claim 15 be entered into the official file inasmuch as it directly addresses an issue raised in the rejection and it also places the entire Application into condition for allowance.

Claims 15-19, 21, 22, 24 and 29 stand rejected under 35 USC §103 over the hypothetical combination of Rowan and Toshio with Fujimoto. The Applicants again note with appreciation the Examiner’s detailed comments hypothetically applying that combination against those claims. The Applicants nonetheless respectfully submit that the combination fails to disclose, teach or suggest the subject matter of those claims. Reasons are set forth below.

The rejection frankly acknowledges that Fujimoto fails to teach the second heated roll used for the relaxation treatment having a surface roughness of 1.5S-8S and the teaching of intermingling to a specific CF value. The Applicants agree. Thus, the rejection turns to Rowan for teachings concerning the relaxation ratio and Toshio for teachings concerning the CF value. The Applicants respectfully submit, however, that even if one skilled in the art were to import the teachings of both Toshio and Rowan into Fujimoto, the methodology from that combination would still fail to result in the subject matter of the Applicants’ solicited claims.

As noted above, the Applicants’ methodology includes the step of controlling the tension gradient between the second heated roll and the winder by varying the actuating pressure of the interlacing treatment nozzle such that the multifilament yarn has a CF value of 1-30. The

Applicants respectfully submit that a combination of Toshio and Rowan with Fujimoto fails to disclose, teach or suggest this step. In that regard, Fujimoto indeed mentions interlacing in the context of “mixing” various fibers to form a yarn. However, there is no discussion other than the mere mention on page 9 at line 46 of interlacing. In particular, there is no mention of controlling the tension gradient by such interlacing between a second heated roll and a winder. Moreover, as already frankly acknowledged, Fujimoto does not disclose a specific CF value. Thus, Fujimoto is inapplicable to that specifically- recited aspect of Claim 15.

There are additional fundamental differences between the Applicants’ claimed subject methodology and Fujimoto. The manufacturing method of Fujimoto uses a spinning rate of 300-2000 m/min, a draw rate of 1.3-4, a heat-treatment at 100-160°C, a relaxation factor of 0.1-20%, and winding. Fujimoto does not mention the use of a heated roll surface roughness of 1.5S-8S. Fujimoto does not disclose a method satisfying both a relaxation factor of 10-20% and a spinning rate of at least 2000m/min. For example, Fujimoto discloses a relaxation factor of -1 to 8% in the case of a spinning rate of at least 2,000 m/min. This difference suggests that the surface roughness of the Fujimoto roll is different from Applicants’ roll.

Yet another important difference between the Applicants’ claims and Fujimoto is with respect to the interlacing treatment. The Applicants’ objectives and Fujimoto’s objectives are different therefore, the processes are different. The Applicants employ a winding step. However, that winding step is conducted after the interlacing treatment. The Applicants’ interlacing treatment functions as a yarn cooling device and a tension gradient controller, thereby contributing to the formation of the specific properties of the yarn. This is sharply contrasted to Fujimoto which winds the yarn and subsequently performs the interlacing treatment. Thus, the Fujimoto interlacing treatment is conducted merely for the sake of mixing the fibers with one another. Thus, Fujimoto is

completely inapplicable.

Although Rowan discloses an interlacing jet, there is no disclosure, teaching or suggestion of using an interlacing nozzle to control the tension gradient between the second heated roll and the winder. In that regard, Rowan refers to the interlacing jet as merely “conventional,” thereby suggesting ordinary use of an interlacing jet with no thought as to its potential impact other than merely a means of mixing together the yarn ends as they pass through that jet. Rowan completely fails to disclose, teach or suggest the functionality of controlling the tension gradient.

There are additional differences over Rowan. The objective of the Rowan methodology is to obtain high strength and low heat shrinkage rate for tire and industrial fibers. The Rowan methodology utilizes a spinning rate of 1,000-4000/min to a first draw, to a second draw with a draw point localizing device and a surface roughness roll, followed by a relaxation treatment. The yarn produced by that methodology is intended for use in tires. On the other hand, the Applicants’ yarns are employed in clothes. Naturally, because the uses for the yarns are completely different between Rowan and the Applicants’ application, the properties of the yarns are different. For example, the breaking extension of at least 40% in the Applicants’ yarns is completely different from the extension provided in the Rowan yarns that are 13.2, 9.6 and 14.5% as illustrated in the Rowan examples.

The Rowan methodology also uses two-times drawing. The Applicants only need to employ drawing once. These are important differences in addition to the temperatures of the drawings rolls of Rowan which are 50-100°C for the first drawing roll and 200-237°C for the second drawing roll. On the other hand, the Applicants employ a drawing roll temperature of 105-180°C.

Also, Rowan utilizes a draw point localizing device with a surface roughness roll wherein the Applicants do not need to use a draw point localizing device. These differences result in different

relaxation rates between Rowan and the Applicants. Moreover, it can be seen that there are significant differences between Rowan and Fujimoto. For example, Fujimoto uses fibers to produce clothes, whereas Rowan uses fibers to produce tires. Because of these differences the properties of the fibers are completely different. The drawing temperature are different, the number of drawing steps are different, and utilizing draw point localizing devices are completely different. Thus, one would have no incentive to hypothetically combine Rowan with Fujimoto. Moreover, Rowan fails to provide additional teachings that would cure the deficiencies set forth above with respect to Fujimoto.

Toshio discloses an interlacing treatment of synthetic fiber multifilaments and producing a yarn composed of those multifilaments having a CF value of 10-100. However, there is no disclosure of the Applicants' claimed PTT multifilaments and, accordingly, one skilled in the art would have no appreciation for the impact on CF values as taught by Toshio with respect to the polyamides and polyesters disclosed therein. Further, there is no disclosure, teaching or suggestion of using the interlacing treatment nozzle as a means of controlling the tension gradient between the second heated roll and the winder. Instead, Toshio leads those skilled in the art to varying conditions with respect to the warp filament diameter versus warp interval and weft interval, the total diameter that assumed the warp as the monofilament. The Applicants respectfully submit that this would lead those skilled in the art away from the Applicants' claimed features wherein the interlacing treatment nozzle controls the tension gradient between the second heated roll and the winder. Toshio is simply nonenabling with respect to teachings that would or even could lead one skilled in the art to the Applicants' claimed subject matter.

It naturally follows that given the nonenabling by Toshio, even if one skilled in the art were to attempt to hypothetically combine Toshio with Fujimoto, the nonenabling, non-teachings of

Toshio are simply not available to be combined with Fujimoto. The Applicants ask the question as to how it can be obvious to employ teachings from Toshio in conjunction with the methodology of Fujimoto when Toshio does not even mention the Applicants' claimed aspect of controlling the tension gradient between the second heated roll and the winder as claimed by the Applicants? The answer is that no combination is obvious. In any event, even if one skilled in the art were to make the attempt to combine Toshio with Fujimoto (and Rowan), the Applicants respectfully submit that the hypothetical combination of Toshio and Rowan with Fujimoto would still fail to result in the Applicants' methodology as claimed in Claim 15. Withdrawal of the rejections of Claims 15-19, 21, 22, 24 and 29 is accordingly respectfully requested.

In light of the foregoing, the Applicants respectfully submit that the entire Application is now in condition for allowance, which is respectfully requested.

Respectfully submitted,



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